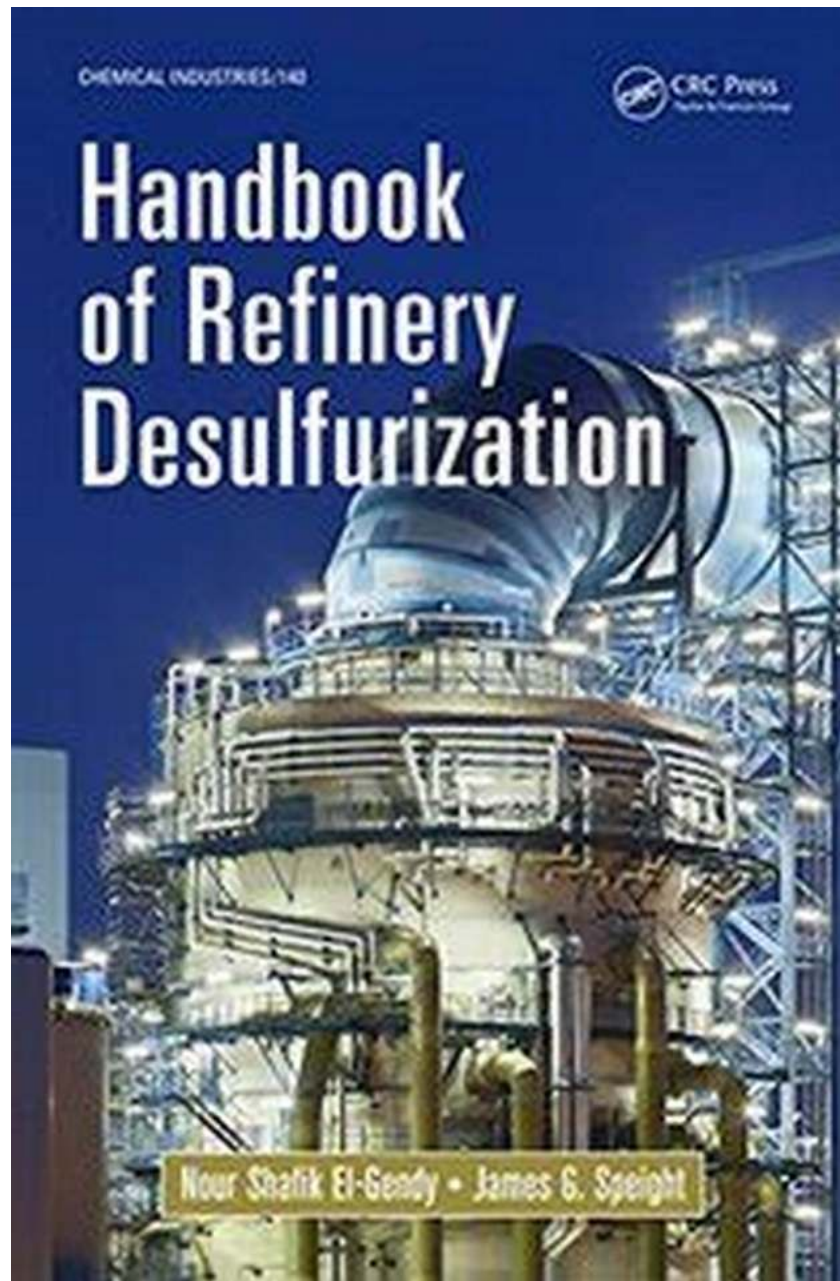
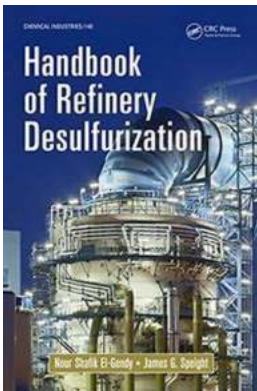


# Handbook of Refinery Desulfurization: A Must-Have Guide for Chemical Industries 140



In today's modern society, industries around the world rely heavily on the production and utilization of fossil fuels. Oil and gas make up a significant portion of these energy sources. However, the presence of impurities, such as sulfur, in crude oil poses challenges for various sectors, including the chemical industry.

To address this issue, the Handbook of Refinery Desulfurization Chemical Industries 140 serves as an invaluable resource for professionals and researchers involved in the refining and chemical industries. This comprehensive handbook offers a detailed understanding of the desulfurization processes and techniques deployed in refineries, ensuring compliance with stringent environmental regulations while maintaining optimal efficiency and economic viability.



## Handbook of Refinery Desulfurization (Chemical Industries 140)

by Nour Shafik El-Gendy (1st Edition, Kindle Edition)

★★★★★ 5 out of 5

Language : English

File size : 55303 KB

Print length : 492 pages



### The Importance of Refinery Desulfurization

Sulfur compounds present in crude oil and its derived products have adverse effects on environmental and human health. Emission of sulfur dioxide (SO<sub>2</sub>) from various industrial processes contributes to air pollution, acid rain, and respiratory issues. Therefore, it is crucial for refineries to minimize sulfur content in their refined products, which include gasoline, diesel, and jet fuel.

Moreover, stringent regulations have been imposed worldwide to limit the sulfur content in transportation fuels. For instance, the European Union required a maximum sulfur content of 10 parts per million (ppm) in diesel vehicles from 2009

onwards. Compliance with these regulations necessitates the implementation of efficient and effective desulfurization methods in refineries.

## **Key Desulfurization Processes**

The Handbook of Refinery Desulfurization Chemical Industries 140 explores a wide range of desulfurization processes to meet the diverse requirements of different refineries.

### **Hydrodesulfurization (HDS)**

HDS is the most commonly used process for desulfurization in refineries. It involves the use of metal catalysts (such as cobalt and molybdenum) and hydrogen gas to remove sulfur from hydrocarbon feedstocks. This process operates under high temperatures and pressures, promoting the conversion of sulfur compounds into hydrogen sulfide (H<sub>2</sub>S) that can be easily separated.

### **Oxidative Desulfurization (ODS)**

ODS is an emerging desulfurization technique that utilizes mild oxidizing agents, such as hydrogen peroxide (H<sub>2</sub>O<sub>2</sub>) or oxygen (O<sub>2</sub>), to selectively oxidize sulfur compounds. This process offers significant advantages in terms of cost-effectiveness, simplicity, and environmental friendliness. The handbook provides in-depth information on the applications and limitations of ODS.

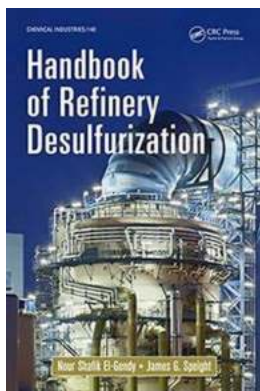
### **Bio-Desulfurization**

With increasing interest in sustainable technologies, bio-desulfurization has gained attention as a promising alternative to traditional desulfurization methods. This process employs biocatalysts, such as bacteria or enzymes, to selectively remove sulfur from crude oil. The handbook explores the potential of bio-desulfurization and its compatibility with existing refinery systems.

## Advancements in Desulfurization Technologies

The Handbook of Refinery Desulfurization Chemical Industries 140 not only covers established desulfurization processes but also provides insights into the latest advancements and future prospects in the field. Novel catalytic materials, reaction mechanisms, and process optimization techniques are discussed to help industries stay at the forefront of desulfurization technology.

With increasing environmental concerns and regulatory pressures, refinery desulfurization has become an integral part of the refining and chemical industries. The Handbook of Refinery Desulfurization Chemical Industries 140 serves as a comprehensive guide for professionals, researchers, and students looking to gain a deep understanding of desulfurization processes. By equipping themselves with the knowledge presented in the handbook, industries can overcome sulfur-related challenges, adhere to environmental regulations, and ensure sustainable production.



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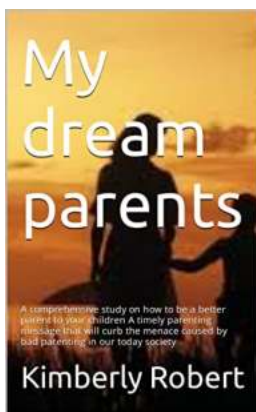


Handbook of Refinery Desulfurization describes the operation of the various desulfurization process units in a petroleum refinery. It also explains the processes that produce raw materials for the petrochemical industry. It illustrates

all the possible processes to lower the sulfur contents in petroleum and its fractions to decrease emissions of sulfur oxides.

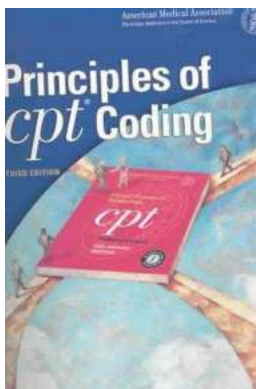
This book introduces you to desulfurization concepts, including biodesulfurization, as well as technology, giving guidance on how to accomplish desulfurization in various refining processes. It contains background chapters on the composition and evaluation of feedstocks and includes diagrams and tables of feedstocks and their respective produce. It also outlines how to decide which method should be employed to remove sulfur from different feedstocks.

A practical and thorough discussion of the field, Handbook of Refinery Desulfurization gives you a strong grasp of the various processes involved with industrial desulfurization while giving you pointers on which procedures to use under certain conditions.



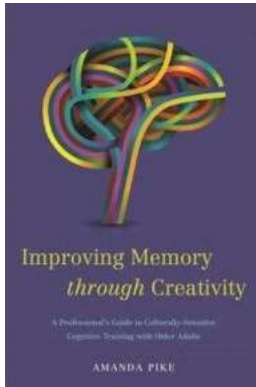
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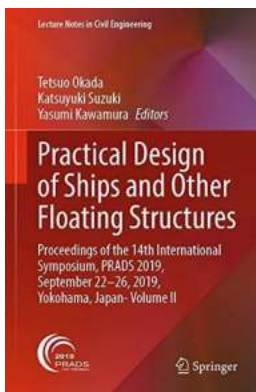
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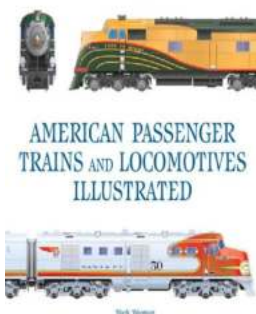
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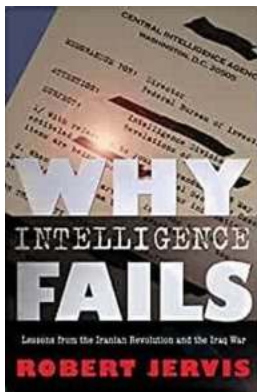
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